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(54) **GALLIUM NITRIDE BASED HIGH-ELECTRON MOBILITY DEVICES**

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See application file for complete search history.

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(57) **ABSTRACT**

A heterojunction device includes a first layer of p-type aluminum gallium nitride; a second layer of undoped gallium nitride on the first layer; a third layer of aluminum gallium nitride on the second layer; and an electron gas between the second and third layers. A heterojunction between the first and second layers injects positive charge into the second layer to compensate and/or neutralize negative charge within the electron gas.

19 Claims, 5 Drawing Sheets